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**Draft**

**AOC-050, AOC-051, and AOC-052  
SOIL REMOVAL ACTION WORK PLAN**

Boeing Renton Facility

Renton, Washington

Prepared for:

**The Boeing Company**

Seattle, Washington

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Project No. 8888.001

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# **AOC-050, AOC-051, AND AOC-052 SOIL REMOVAL ACTION WORK PLAN**

Boeing Renton Facility  
Renton, Washington

## **1.0 INTRODUCTION**

The Boeing Company (Boeing) has been working with the Washington Department of Ecology (Ecology) to address historic releases of hazardous substances at the Boeing Commercial Airplane Group - Renton Plant (Site) located in the City of Renton, Washington. This Soil Removal Action Work Plan (Work Plan) has been prepared to support a soil removal action for three areas of concern (AOC) under the authority of WAC 173-340-430. This Work Plan describes proposed soil remediation work for AOC-050, AOC-051, and AOC-052 that will be performed in association with demolition of Building 10-52.

## **1.1 SITE BACKGROUND**

AOC-050, AOC-051, and AOC-052, are contiguous and located adjacent to the south side of Building 10-52 (Figure 1). The AOCs comprise the locations of former USTs URE-38, URE-39, and URE-40, which stored fuel oil (diesel) to provide backup fuel for boilers located inside the Building 10-52 Boiler/Mechanical Room. The USTs were installed in 1957. Each was constructed of steel and had a capacity of 25,000 gallons. The USTs were removed in August 1992. During the removal of the USTs, petroleum hydrocarbon-impacted soil was observed and excavated to the extent feasible. Groundwater monitoring conducted in the vicinity of the former USTs since June 1993 did not detect diesel-range total petroleum hydrocarbons (TPH-D) concentrations exceeding Model Toxics Control Act (MTCA) Method A screening levels.

## **1.2 PREVIOUS INVESTIGATIONS**

Section 5.16 of the final Remedial Investigation (RI) Report (Weston, 2001) presents the results of groundwater investigations conducted under the RI for these AOCs. Soil characterization and partial soil removal were performed as part of interim actions for these AOCs. Additional information on these AOCs, including a summary of interim actions/decommissioning of the USTs is provided in Appendix A of the RI. The following sections summarize previous interim soil removal measures, hydrogeologic conditions, and groundwater quality results presented in the RI Report.

### **1.2.1 Interim Actions and UST Decommissioning**

The USTs were removed and replaced in August 1992. During UST removal, petroleum hydrocarbon-impacted soils were observed along the west and north excavation sidewalls. Analytical results indicated that soil in the northwest and central parts of the excavation contained concentrations of TPH-D exceeding MTCA Method A cleanup levels. Prior to installing new USTs in this area, TPH-impact soil was excavated to the extent feasible. Excavation to the north of the USTs was constrained by the presence of Building 10-52. The approximate extent of the 1992 excavation is shown on Figure 1.

In May 1993, soil samples were collected from seven post-excavation soil borings. Only two soil samples, collected near the south wall of Building 10-52, had concentrations of TPH-D exceeding the MTCA Method A soil cleanup levels.

### **1.2.2 Hydrogeologic Conditions**

Fill observed in this area consisted of fine- to medium-grained, greenish-brown sand with some silt and some gravel. Alluvium beneath the fill consisted mostly of greenish-brown clay to silty clay interbedded with fine- to medium-grained, greenish-gray sand with silt, clay, and peat lenses. Boring logs from the groundwater monitoring well GW156 installed during the Tier 2 investigation and existing wells GW059, GW060, GW061, and GW062 show the contact between the fill and alluvium to range from approximately 5 to 7 feet bgs.

Groundwater at the time of drilling was encountered at approximately 5.5 feet bgs. Depths-to-groundwater measured at GW059 and GW156 during the three Facility-wide groundwater measurement events (9 June 1999, 31 March 2000, and 7 September 2000) ranged from 4.7 to 6.2 feet bgs. Seasonal variations observed in groundwater elevations as measured during the three monitoring events in these wells were approximately 0.56 feet. Groundwater in the area of the AOCs generally flows to the northwest to west. The hydraulic gradient is estimated to range from 0.001 to 0.005.

### **1.2.3 Groundwater Results**

Seven sets of quarterly groundwater quality samples were collected in 1999 and 2000 from five monitoring wells (GW059 through GW062 and GW156) and analyzed for TPH-D. TPH-D was not detected above the detection limit of 0.25 mg/L in any groundwater sample. Based on these results, TPH-D was determined not to be a constituent of concern (COC) in groundwater at these AOCs.

## **2.0 OBJECTIVES AND SCOPE**

This Work Plan outlines the specific steps that will be taken for the planned soil removal remedial action at AOC-050, AOC-051, and AOC-052. The objective is to remove TPH-affected soil exceeding cleanup levels in the source area to the extent practicable. The scope of this Work Plan is affected on-site soil.

## **3.0 CLEANUP LEVELS**

Soil cleanup levels developed in accordance with the requirements of MTCA regulations (WAC 173-340) will be used as the guidance for conducting this soil removal action. Previous groundwater quality monitoring indicates that groundwater is not impacted by TPH-D. Based on these data, soil cleanup levels for TPH-D based on protection of groundwater are not applicable to these AOCs. The applicable soil cleanup level for TPH-D at this site is the MTCA Method A Unrestricted Land Use cleanup level of 2,000 mg/kg.

## **4.0 REMEDIATION APPROACH**

This section describes the approach that will be used to complete the soil removal action at AOC-050, AOC-051, and AOC-052. Figure 1 shows the location and approximate extent of the proposed excavation area. The planned approach includes excavating soil from the area between the northern extent of the 1992 excavation area and Building 10-52 and collecting confirmation samples to verify remediation prior to backfilling the excavation area.

### **4.1 OVERVIEW OF SOIL REMOVAL ACTION**

This soil removal action will be performed to remove, to the extent practicable, soils containing TPH-D at concentrations above cleanup levels. Prior to excavation, five monitoring wells will be decommissioned, the three existing USTs will be decontaminated and removed, the adjacent above grade features removed, and building 10-52 will be demolished. Following demolition of Building 10-52, the only expected constraint on soil excavation will be depth to groundwater. Soils will only be excavated to the water table. If there are indications soil contamination extends below the water table the need for groundwater sampling will be evaluated. The final extent of excavation to the north will be based on field observations and the results of confirmation soil sampling. Following soil removal and receipt of confirmation sampling analytical results indicating that remaining soils meet cleanup levels, clean soil will be used to backfill the excavation.

## **4.2 PRE-EXCAVATION ACTIVITIES**

Activities that will be performed prior to soil excavation include decommissioning of five monitoring wells, the three existing USTs will be decontaminated and removed, the adjacent above grade features removed, and demolition of Building 10-52. Monitoring wells GW059 through GW062 and GW156 will be decommissioned in accordance with Washington State Minimum Standards for Construction and Maintenance of Wells (Chapter 173-160 WAC). Previous groundwater quality monitoring has demonstrated that groundwater is not impacted by TPH, and these wells will not be replaced.

Following well decommissioning, Building 10-52 will be demolished and the foundation removed, allowing access to soils north of the AOCs that were previously inaccessible.

## **4.3 EXCAVATION**

Soil north of the AOCs will be excavated to the water table, which is expected to be encountered at a depth of approximately 5 feet bgs. The area of excavation, shown on Figure 1, is based on the approximate reported location of soil samples collected following the 1992 UST removal with TPH-D concentrations above cleanup levels. The planned excavation will extend approximately 20 feet north of the edge of the 1992 soil excavation to immediately under the edge of the foundation of Building 10-52. The eastern and western extents of the excavation will correspond to the extents of the 1992 excavation. Based on results of confirmation sampling discussed in Section 4.4, additional soil may be excavated to the north, east, or west, as needed to meet cleanup levels.

Excavation will be completed using a backhoe, or other means, and soil will be properly managed until off-site disposal occurs. Health and safety monitoring will be conducted throughout the excavation activities in accordance with the established health and safety program. A qualified field representative will observe the excavation and screen soils as they are exposed using visual observations and photoionization detector (PID) measurements of soil headspace samples.

At a minimum, excavation will proceed to the extents shown on Figure 1. Should visual observations or PID measurements indicate the likely presence of contaminated soil, additional soil will be removed. If there are indications that contamination extends below the water table the need for groundwater sampling will be evaluated. Once the planned extent of excavation has been reached and the field screening does not indicate the continued presence of contamination, confirmation soil samples will be collected along the exposed side wall.

Confirmation samples will be analyzed using a rapid turn-around-time (TAT), allowing the results to be used to direct further excavation, if needed. If the results of confirmation sampling along a sidewall indicate the continued presence of TPH-D at concentrations above the cleanup level, additional soil will be excavated in the vicinity of the sample that exceeded the cleanup level. The extent of additional excavation will be determined in the field based on the results of the confirmation sampling and field screening.

#### **4.4 CONFIRMATION SAMPLING**

Confirmation soil samples will be collected from the sidewalls of the excavation area once the planned extent of excavation has been reached and the field screening does not indicate the likely continued presence of contamination. One sidewall sample will be collected every twenty feet of lateral distance from the west, north, and east sides of the excavation (approximately 6 samples, based on the initial projected extent of excavation). Samples will be collected from the smear zone, just above the apparent groundwater level, which is estimated to be at approximately 5 feet bgs.

Depending on stability of the excavation and access, samples may be collected from the bucket of the backhoe performing the excavation or be a direct grab sample. Sample collection will be conducted in accordance with the Ecology-approved RI Work Plan (Weston, 1998) and as amended with subsequent revisions, which includes field methods for sample collection, sample designation, equipment decontamination, and documentation. Soil samples will be collected per methods described in Section 5.1.3 of the RI Work Plan (Sediment/Catch Basin Material). However, in order to better represent the residual contamination, the samples will be discrete rather than composite.

The samples will be analyzed by Analytical Resources Incorporated (ARI) of Tukwila, Washington, for TPH-D. Table 1 lists the sample containers, holding times, and preservations for the TPH-D analyses.

#### **4.5 WASTE MANAGEMENT**

Waste management will follow the guidelines described in the approved RI Work Plan (Weston, 1998). Contaminated soil from the excavation will be managed by Boeing. Soil will be shipped offsite following proper characterization and disposition in accordance with applicable state and federal regulations. All personal protective equipment and disposable material or equipment will be double-bagged and disposed of in Boeing waste containers.

## **4.6 STORM WATER MANAGEMENT**

Appropriate storm water best management practices will be incorporated and maintained where necessary in order to prevent storm water runoff and runoff into or from the excavation area or soil stockpile areas.

## **5.0 QUALITY CONTROL**

The quality assurance and quality control (QA/QC) procedures outlined in the Quality Assurance Project Plan (QAPP) and presented in Section 6.0 of the approved RI Work Plan will be followed for confirmation sampling performed under this Work Plan. All analytical data generated by the laboratory will be reviewed in accordance with the QAPP. Data quality review will assess laboratory performance relative to the QC specifications listed in Section 6.0 of the RI Work Plan.

## **6.0 PROJECT ORGANIZATION**

All excavation work will be conducted by Boeing or their designated contractor. Geomatrix will collect the confirmation samples and evaluate results to determine the extent of excavation necessary to meet cleanup levels.

## **7.0 REPORTING**

After receipt of analytical results and data validation, all results will be summarized in a final soil removal action memorandum for AOC-050, AOC-051, and AOC-052 that will be submitted to Ecology.

## **8.0 SCHEDULE**

It is currently anticipated that this work will be performed in March 2005 after well decommissioning and the demolition of Building 10-52 is completed. The excavation and confirmation sampling will require approximately 2 days. The soil removal memorandum will be submitted to Ecology within 60 days after receipt of final analytical results from ARI.

## **9.0 REFERENCES**

Weston, 1998, Prepared for The Boeing Company: Remedial Investigation Work Plan Boeing Renton Plant, Roy F. Weston, Seattle, Washington, April.

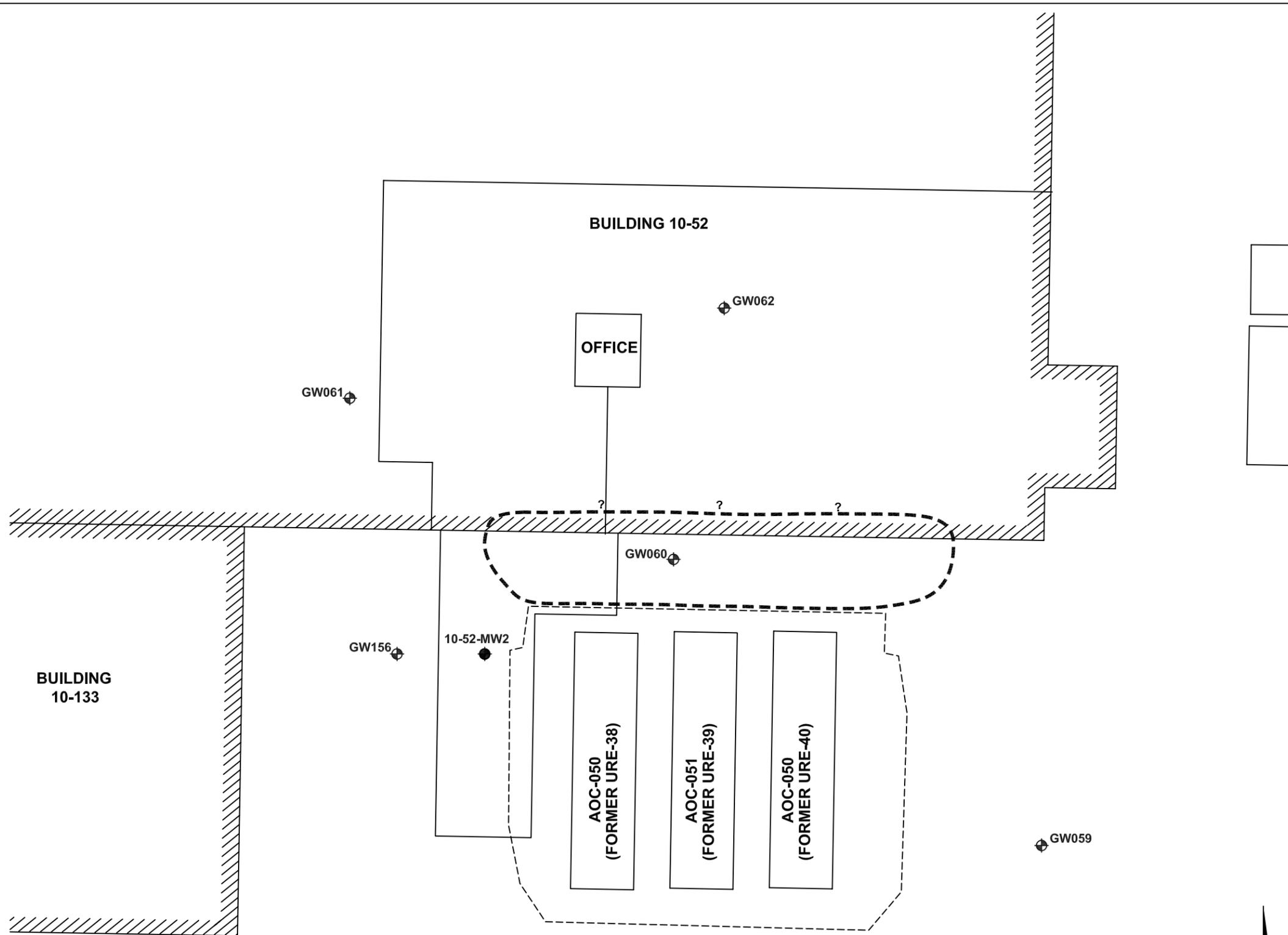
Weston, 2001, Prepared for The Boeing Company: Remedial Investigation Report, Boeing Renton Plant, Renton Washington, Roy F. Weston, Seattle, Washington, August.

**TABLE 1**

**PROPOSED SOIL CONFIRMATION SAMPLE ANALYSES  
AOC-050, AOC-051, AND AOC-052 SOIL REMOVAL ACTION**  
Boeing Renton Facility  
Renton, Washington

| <b>Sample Analyses</b> | <b>Analytical Method</b> | <b>Sample Container</b> | <b>Holding Time</b> | <b>Preservative</b> |
|------------------------|--------------------------|-------------------------|---------------------|---------------------|
| TPH-Diesel             | TPH-Diesel by NWTPH-Dx   | 4 oz.                   | 28 days             | none                |

S:\8888\013\CAD\AOC-050, 051, 052 Ext of Soil Reml.dwg

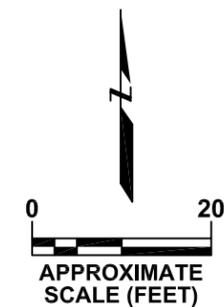
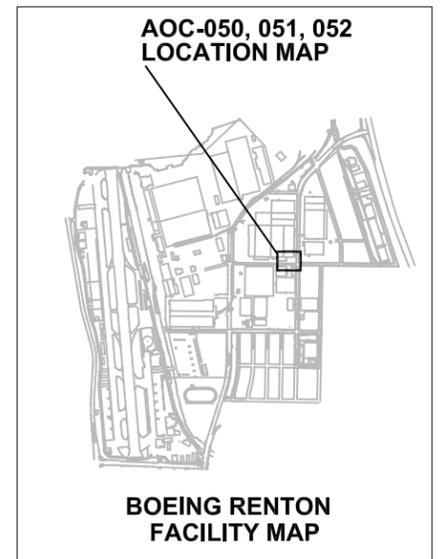


**LEGEND**

- GW152  MONITORING WELL LOCATION
- 10-52-MW2  DECOMMISSIONED MONITORING WELL LOCATION
- LIMITS OF EXCAVATION (BURLINGTON NORTHERN, 1992)
- APPROXIMATE EXTENT OF PROPOSED EXCAVATION

**NOTES**

1. HORIZONTAL DATUM:  
WASHINGTON STATE COORDINATE SYSTEM  
NORTH ZONE NAD83 (91)  
VERTICAL DATUM:  
NATIONAL GEODETIC VERTICAL DATUM  
(NGVD1929)
2. BASEMAP COMPILED BY DUANE HARTMAN &  
ASSOCIATES INC., DECEMBER, 1994



|  |                                    |                            |
|--|------------------------------------|----------------------------|
| <p><b>AOC-050, 051, 052<br/>EXTENT OF SOIL REMOVAL<br/>Boeing Renton Facility<br/>Renton, Washington</b></p> |                                    |                            |
|                         | <p>Project No.<br/><b>8888</b></p> | <p>Figure<br/><b>1</b></p> |